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ABSTRACT

This paper defines a conceptual model for institutional research in the community college and identifies sources of information, programs, and services that provide data necessary for implementation of the model. The model contains four specific subsystems: goal setting, program development, program review, and cost effectiveness. Each subsystem distinctively relates to planning and decision making and each has component data fields that identify and organize information into subject categories. The data fields include community, students, programs, and resources. In order for research in any subsystem to be valuable and an effective determinant in policy making, it must take into account the various aspects of all data fields. Translation of research data into planning concepts and alternatives is the crux of the research enterprise. After program outcome data have been collected, management guidelines are necessary to the translation process. Establishing guidelines involves setting up systemwide priorities and requires administrators to formulate some decision apparatus for converting data into action. A list of programs, services, and resource materials for the four subsystems is provided and includes such items as measurement instruments and reference works. (TR)

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A Conceptual Framework for Institutional Research in Community Colleges

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Introduction

Emerging research trends in the two-year colleges indicate that three major developments are now beginning to take place. These developments have come about primarily in response to a need for assistance in institutional decision making and have closely paralleled the increased emphasis on accountability that has become the hallmark of the seventies. Perhaps the most significant development is a renewed emphasis on applied rather than theoretical research, which has led to an increase in usable rather than abstract models. The steady increase in the number of research projects devoted to specific problems rather than general investigation clearly reflects this shift in emphasis.

A second development is the redefinition of functional objectives in institutional research. The focus is now shifting to such matters as enrollment projections, outcomes in career programs, economic impacts of the college on the community, cost effectiveness, administrative organization, institutional goals, college governance, instructional effectiveness, community needs, and many related topics. Studies that merely tabulate student characteristics no longer fulfill the information needs of potential users. Needed now are studies that concentrate on specific areas and individual needs, rather than general student characteristics. In addition, surveys are required to determine the educational needs of particular segments of the population such as rural and urban groups, ethnic minorities, elderly citizens, and women.

Finally, institutional research has become more sensitive to the need for empirical information on whether community colleges meet the expectations of the communities they serve and the requirements of legislative agencies. A premium is placed on information related to

the quality of impacts produced by the college as contrasted to those imposed on it by the individuals and groups using its services. This development is clearly reflected in the number of recent studies conducted to determine student outcomes in the educational process.

Research Conceptualized

Given this emphasis on the practical aspects of research and the information needs of faculty and administrators, research can be defined as a process designed to assist institutions in: (1) defining their goals and purposes; (2) identifying programs and policies that meet these goals; (3) evaluating programs to find out whether they are useful to the institution; and (4) mapping the flow of resources to determine the cost effectiveness of college programs.

There are many sources of data, ranging from the expressed needs of community subgroups to the published requirements of state agencies. The value of such resources for a particular organization depends on the efforts of many to collect, organize, and apply the data when decisions are made. At their best, research data are a constructive tool for management to use in making key decisions and in implementing change; at their worst, they can be just window dressing for decisions that have already been made. To be constructive, research should have a direct effect on decisions concerning institutional goals and purposes and should affect the methods by which these decisions are made. For research to have such an effect on decision making it must meet three essential conditions. First, it should help faculty and administrators establish institutional goals and objectives; second, it should play an integral part in planning; and, third, it should provide the means for evaluating institutional programs and activities in relation to stated goals.

There are several assumptions upon which these conditions are based:

- Facing an uncertain future, administrators are sensitive to the need for research to assist in the formulation or modification of institutional goals where necessary.
- Research, as an integral part of the decision-making process, both precedes and follows the establishment of institutional goals.
- Research, as a pivotal element in goal setting, plays a key role in planning for the long-range development of the institution.
- A recognized apparatus exists in every institution for the conversion of research findings into planning concepts and decision alternatives.
- Comprehensive data systems, once organized, will be used by faculty and administrators to assist in the development and guidance of individual students, and to guide the further development of the institution through variable internal and external conditions.

If these conditions and assumptions are accepted, a conceptual foundation for research will be established and a system designed for its organization into data fields. The purpose of this paper is to define a conceptual model for institutional research in the community college and, where possible, to identify sources of information, programs, and services that can provide data needed to support the implementation of the model.

Institutional research in the community college can be described in a model that contains four specific subsystems: goal setting, program development, program review, and cost effectiveness. Each subsystem has a distinctive relationship to planning and decision making, and each has component data fields that identify and organize information into subject categories. These data fields are: community, students, programs, and resources. Within larger community colleges, the last

data field may be expanded into facilities, finance, and staff, but since these three tend to operate together, the model is more simply served by the single data field--resources. Figure 1 is a diagram of the model just described, showing the four subsystems and the four data fields with their relationship to institutional research and the planning process.

Before discussing in greater detail management's use of research data for planning and decision making, it may be helpful to describe more fully each of the four subsystems of the model and the types of data that are incorporated into each of the four data fields. The descriptions that follow are meant to be illustrative and not exhaustive.

Goal setting

Most two-year colleges have a general set of goals based on a philosophy formulated at an early point in their development. Such goals, once developed, may receive little attention except in relation to visits from regional accrediting associations when an attempt may be made to relate them to descriptive data, collected after the fact, to demonstrate that the goals are indeed being met. Unfortunately, these goals normally are not defined in a way that makes them effective in guiding institutional development, nor do they receive regular review and evaluation by faculty and administrators to help make them a vital force in management.

Every institution should collect data that can become a source of direction for determining the types of goals to be pursued. It is not enough for a college to commit itself to offering career programs simply because this is an objective usually set by a comprehensive community college. Ideally this goal should be determined in accord

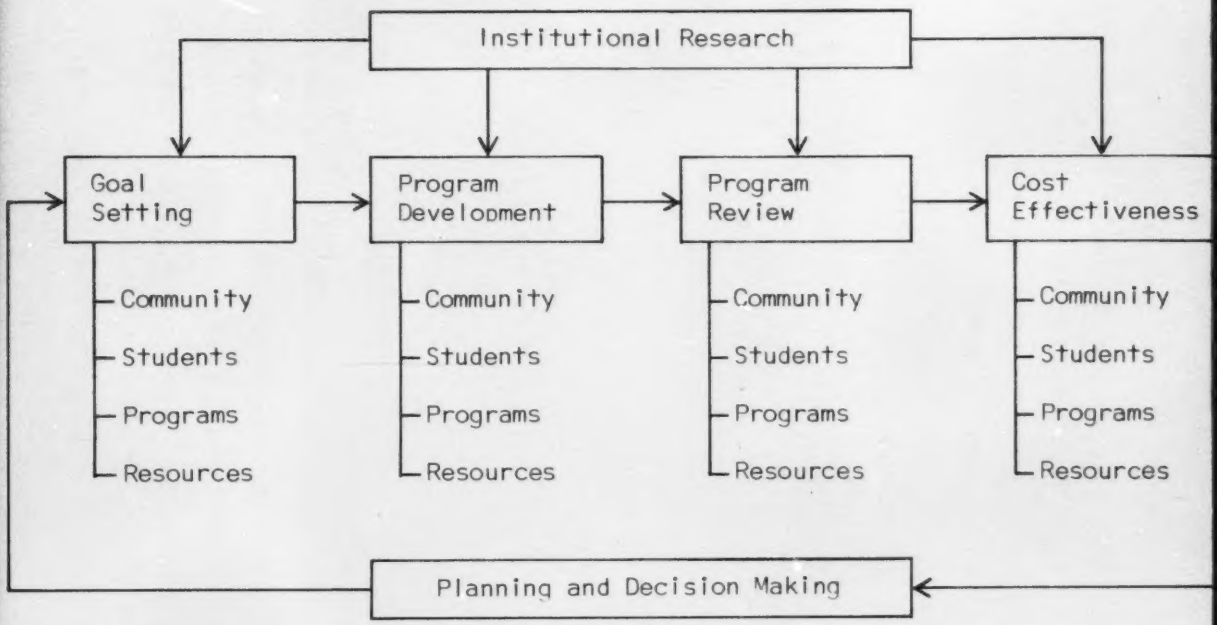

Figure 1: Conceptual Model for Institutional Research

with data describing regional and local needs for career programs. It should be stated in terms of the total percentage of enrollment to be served by such programs, the relationships of these programs to manpower needs of the community, and the total number of positions available to program graduates. Similarly, a goal concerning guidance services should identify through research the kinds of needs students have for such services as well as the anticipated results. Obviously, the formulation of goals based on research data will not be easy in many areas, but the effort must be made if goals are to serve as a yardstick for institutional development.

Within each of the four data fields, the following areas of concern in the goal-setting subsystem serve as examples that need to be addressed by community college research.

I. Goal Setting

A. Community

1. Geographical characteristics of the region served by the college region, including the size of the area, zoning characteristics, and natural barriers to campus development.
2. Demographic characteristics of the region, including population density and characteristics, migration patterns, and transportation facilities.
3. Industrial/occupational characteristics, including manpower distribution and projected needs, number and types of businesses and industries, rate of unemployment, and prospect of "growth vs. no growth" occupations.
4. Regional and state statutes regulating institutional goals.

B. Students

1. Individual and group perceptions of college goals.
2. National and regional enrollment patterns, including intended fields of study and degree goals.

C. Programs

1. Opportunities for postsecondary education within the area, including number and types of postsecondary institutions, goals, primary clientele, and articulation policies and procedures.

D. Resources

1. Potential sources for outside or supplemental support for institutional goals.
2. Staff inventory of special abilities and specific areas of expertise.
3. Facilities both on and off campus available for institutional use.

Program development

The program development subsystem describes specific actions taken by the community colleges to achieve the previously stated goals. The data fields of program development, although overlapping with those of goal setting, tend to concentrate on the specific educational needs of the community.

The development of programs based on objectives that reflect research on community needs carries forward the process through which the institution's goals are created. If the objectives are properly stated, they can enable faculty and administrators to appraise programs according to their use of current resources and measure their

effectiveness against a series of immediate and long-range yardsticks. The types of institutional research needed in support of program development can be summarized as follows.

II. Program Development

A. Community

1. Educational needs and characteristics of secondary school students and the adult population of the region served by the college.
2. Local employers' perceptions and needs, and manpower projections at the local, state, and federal levels.

B. Programs

1. Professional, state, and regional regulations affecting program development.
2. Specific program offerings in other postsecondary institutions in the region.
3. Program strengths and weaknesses in feeder secondary schools.

C. Students

1. Enrollment projections.
2. Educational needs and characteristics of potential students and enrolled students.

D. Resources

1. Projections of program costs and revenues.
2. Projections of staffing requirements.
3. Projections of amount and type of facilities required.

Program review

The third subsystem in the institutional research framework is program review or, to give it a more formal and potentially threatening name, program evaluation. This subsystem is perhaps the single most routinely examined area in community college research today with the focus of the research generally on student outcomes.

Figure 2 shows the use of the concept of "outcomes" to describe the progress of students in relation to programs. In this diagram, background characteristics of entering students, objectives of the program, and descriptive measures of the college environment are considered "input." The "outcomes," observed throughout the program function, are measured and related to the "inputs" in order to obtain indices of program effectiveness.

Programs can be measured at three different intervals: at the time of initial student enrollment (input); during the period of enrollment (functioning); and after termination of study (outcomes). Some of the studies typically conducted in this area are the following.

III. Program Review

A. Community

1. Economic impacts of the college on the community.

B. Students

1. Characteristics of enrolled students, including demographic, intellective, and perceptual-attitudinal.
2. Attrition follow-up for both course and college withdrawal.
3. Transfer follow-up.
4. Graduate follow-up, including employment, satisfaction with

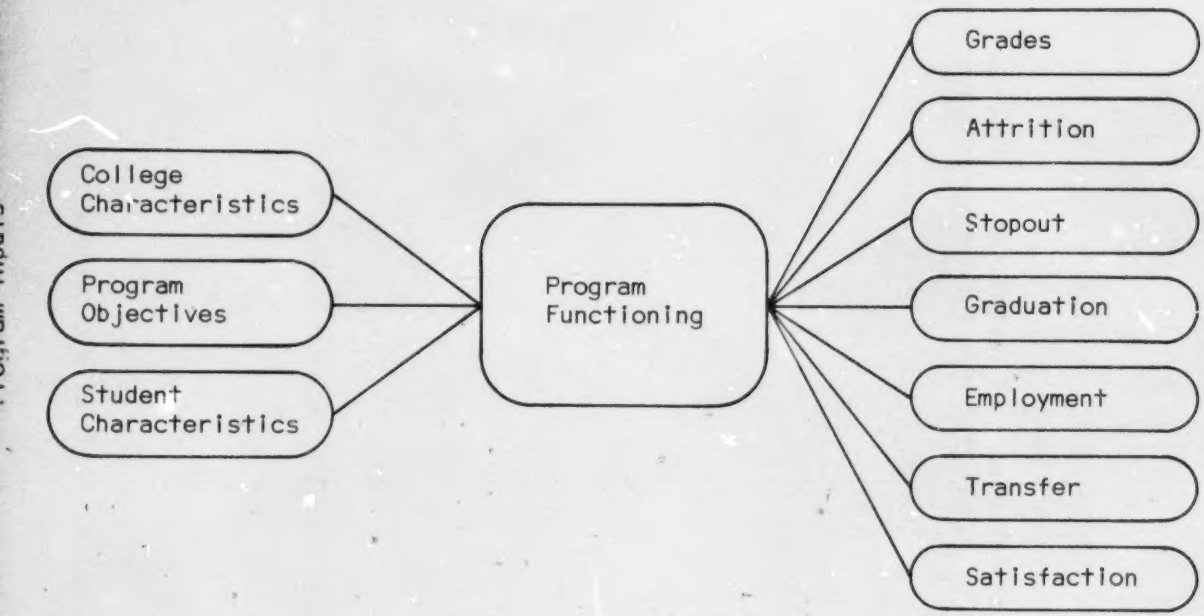

Figure 2: Input-Outcome Model of Program Functioning

education and employment, and certification/licensure results.

5. Perceptions of college.

C. Programs

1. Course and program demand, including longitudinal analyses.

D. Resources

1. Faculty perceptions of college.
2. Space utilization, including library facilities.

Cost effectiveness

The fourth subsystem in institutional research responds to the need of community college planners for a gross quantitative measure of the cost effectiveness of present programs, for an analysis of the major consequences of present programs, and for an estimate of the major consequences of possible alternative programs. Since only enrollment-based information currently meets the criterion of credibility, cost effectiveness analyses have been limited to data relating only to numbers of students. At most, this type of analysis produces a unit cost for each operation and should more appropriately be labeled "cost analysis."

Some of the studies that have been conducted in this area provide the ingredients of unit cost:

IV. Cost Effectiveness

A. Community

1. Federal, state, and community funding levels across institutions and programs.

B. Students

1. Enrollment analyses, including headcount, full-time enrollment, credit-hour production by college, division, department, course, and section.

C. Programs

1. Costs of materials and supplies.

D. Resources

1. Faculty and staff salaries and benefits.
2. Energy and maintenance costs.
3. Facility costs/depreciation.

Planning and Decision Making

The translation of research data into planning concepts and alternatives to current plans is the crux of the research enterprise. Management decisions do not simply follow from the existence of research data. There is a great need to increase management's awareness of the value of converting past, present, and future research data into planning concepts. When data on program outcomes have been collected, management guidelines are necessary for their translation into planning alternatives. Establishing guidelines involves setting up systemwide priorities and requires that administrators formulate some kind of decision apparatus for converting data into action.

Many administrators fail to attend to this need for a decision apparatus and lapse into lethargy when they realize that they must assume a leadership role if planning is to be successful. The absence of a decision-making system allows the accumulation of a core of unanswered questions that plague educational planners: What are the

uses of research data in community colleges? What procedures should be used for the conversion of data into planning? Who should be responsible for assessing the implications of various data trends and advising management of alternative decisions to be made on the basis of research data? What is an appropriate balance between politics and research in the planning process? How can research data be used to improve management decisions? What is the value of planning in an institution if political concerns often override planning alternatives? Questions such as these must be answered if two-year colleges are to conduct useful research programs.

Figure 3 presents a decision diagram that depicts the environment for converting research findings into planning concepts. This schema shows the potential for conflict in competing staff interests, a situation that has proven so dysfunctional for community colleges. Ideally, planning should be a graduated process that involves making decisions that strike an even balance between political considerations and research data. Too often, political expediency has been the dominant force in decision making, and research has been a superficial adjunct to the process. This tendency is most evident when administrators manipulate research findings to fit a framework congruent with their own value expectations when they make decisions affecting the direction of the institution.

Institutional constituencies, depending on their size and internal cohesiveness, bring different value perspectives to the decision-making process. To the extent that these value perspectives are identified and understood, research can be effective as a guide to institutional development. By presenting faculty and administrators with different alternatives based on research findings, the research model can be used to forge decisions regarding long-range development.

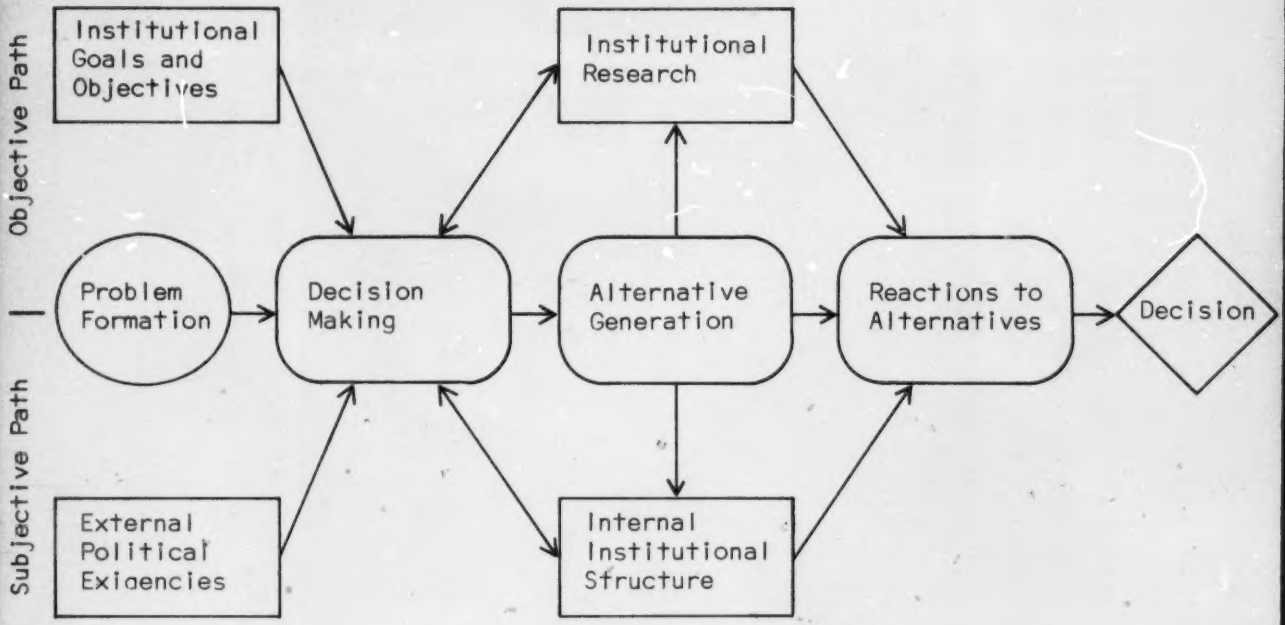

Figure 3: Decision Process Diagram

Using available data in combination with stated institutional goals and staff input, decision alternatives can be constructed. These alternatives can range from a solution that is purely political to a data-based approach to long-range planning. The most acceptable solution is likely to lie somewhere in the middle, but by identifying potential alternatives faculty and administrators can begin to establish criteria for future planning.

In the absence of a decision-making system to convert research data into planning concepts, research already completed is often of limited value. A decision model should be developed that is sensitive to the political climate in which an institution functions as well as flexible enough to allow time for the development of decision alternatives. It should not be assumed that the values and interests of college constituencies will always be compatible with research data, but that administrators will ultimately be able to achieve consensus on an objective base for planning if they are given accurate and meaningful information.

The following annotated list of programs, services, and resource materials for the four subsystems is provided to assist readers interested in implementing components of the model described here.

Annotated List of Programs, Services, and Resource Materials

I. Goal Setting

1. Institutional Goals Inventory (IGI), Educational Testing Service
   An instrument to aid institutions in defining their goals, IGI should be specially useful in the planning and evaluation process. Results are reported for groups, not for individuals.

2. Occupational Outlook Handbook, 1976-77 edition, U.S. Department of Labor
   A standard reference for vocational guidance information covering job descriptions, required training, working conditions, and job prospects. See also, Occupational Handbook Quarterly and Occupational Outlook for College Graduates, 1976-77 edition.
3. Oregon Career Information System (CIS), 247 Hendricks Hall, University of Oregon, Eugene, Oregon 97403
   The CIS is a developing system for states that provides current labor market and educational information for individuals, schools, and social agencies. The purpose is to improve career choices and training opportunities.
4. State Postsecondary Education Profile Handbook, 1977 edition, Education Commission of the States
   A compendium of information, by state, that describes the educational structure, presents descriptive statistics, and lists annual and biennial reports issued by state agencies, and special reports and studies currently under way or being planned.
5. The Condition of Education, 1977 edition, National Center for Educational Statistics
   A statistical report that delineates the context and climate for education and describes educational activities, the institutions that offer them, and the persons who participate. The 1977 edition repeats very little data from the 1975 and 1976 editions.

II. Program Development

1. Academic Unit Planning and Management (AUPM), National Center for Higher Education Management Systems
   AUPM is intended to help in the identification and organization of

data about academic unit functions, the availability and allocation of human and physical resources, the sources and uses of funds, and the planning and assessment of outcomes.

2. Admissions Testing Program Summary Reporting Service, The College Board

   Summary reports describing the characteristics of approximately one million high school seniors are produced each year by the College Board. Companion reports are also produced for schools, postsecondary institutions, and states on students who participate in the Admissions Testing Program.

3. Adult and Career Education Survey (ACES), The College Board

   ACES is a questionnaire under development to assist industry and postsecondary institutions in assessing local community needs for educational programs and services.

4. Higher Education Enrollment Forecasting, National Center for Higher Education Management Systems

   This document discusses the use of specific forecasting techniques and procedures that are applicable in a wide variety of situations. Illustrations of the most widely used techniques are provided.

5. Student Financial Aid Management Services, College Scholarship Service of the College Board

   This is a flexible array of services designed to assist postsecondary institutions in many phases of the financial aid process. Included are questionnaires to document student expenses and resources, and software programs to manage financial aid awards.

6. Student Outcomes Questionnaires, National Center for Higher Education Management Systems

   This is a series of questionnaires, with supporting materials, that

can be administered to entering, current, graduating, and nonreturning students, as well as recent and five-year alumni. The questionnaires were designed to support the collection of longitudinal data as well as collections for one-time use.

7. Student Search Service Volume Projection System, The College Board
   This system allows institutions to make projections of various market volumes using an interactive computer system and the files of the Student Search Service.
8. Survey of Plans for Education and Careers (SPEC), The College Board
   SPEC is a questionnaire designed for local and statewide use to assess the plans of high school students for further education and for the world of work. This document is especially helpful for determining local educational needs of the graduating secondary school population.

III. Program Review

1. A Manual for Conducting Student Attrition Studies in Institutions of Postsecondary Education, National Center for Higher Education Management Systems
   This manual provides educational planners with the tools necessary to investigate and analyze decreasing enrollments caused by students who permanently leave institutions, those who leave and plan to return, and those who transfer to other institutions.
2. The College Board--Programs and Services
   a. Advanced Placement Program (APP). A program of instruction and examination in 13 academic areas to assist students in obtaining credit for college work done in secondary schools.

b. Career Skills Assessment Program (CSAP). A program of guidance, instruction, and assessment utilizing six separate self-assessment measures, designed for instructionally relevant clusters of career skills.

c. College-Level Examination Program (CLEP). A program of five general examinations and 47 subject examinations designed to assist students in demonstrating college-level proficiencies.

d. Comparative Guidance and Placement Program (CGP). A comprehensive collection of instruments designed to assist postsecondary institutions in curricular guidance and course placement for entering students.

e. Descriptive Tests of Language Skills (DTLS). A developing program of diagnostic tests and curriculum guides in reading comprehension, logical relationships, vocabulary, usage, and sentence structure, designed primarily for use in postsecondary institutions.

f. Descriptive Tests of Mathematics Skills (DTMS). A developing program of diagnostic tests and curriculum guides in computation, elementary algebra, intermediate algebra, and elementary functions.

g. Student Descriptive Questionnaire (SDQ). A 63-item biographical questionnaire covering topics such as educational history, extra-curricular activities, self-assessed abilities, and future educational plans.

h. Test of Standard Written English (TSWE). A multiple-choice test intended to assist postsecondary institutions in English course placement, especially useful for students who need additional instruction in written English usage.

i. Testing Academic Achievement (TAA). A program consisting of recent AP Examinations and CLEP General Examinations and other College Board Achievement Tests, for institutional use in placement, exemption, credit and guidance decisions.

j. Transfer Information Service (TIS). A service designed to support colleges and universities in their efforts to make their admissions, financial aid, and placement services responsive to the needs of transfer students.

3. Educational Testing Service--Programs and Services

a. College and University Environment Scales (CUES II). An instrument designed to enable an institution to find out how its students perceive its intellectual-social-cultural climate.

b. Institutional Functioning Inventory (IFI). An instrument that assesses perceptions of faculty, administrators, and students about administrative plans, teaching practices, and types of programs.

c. Student Reactions to College (SRC). A questionnaire designed specifically to enable two-year and open-door college students to express views about their college experiences.

d. Student Instructional Report (SIR). An instrument designed to give faculty members an opportunity to have students evaluate courses and instruction in a systematic and anonymous way.

IV. Cost Effectiveness

1. A Fact Book on Higher Education, Issues 1-4, American Council on Education, 1977

This series of publications compiles data from documented sources and presents them in a consistent and longitudinal format. The four issues each year cover demographic and economic data,

enrollment data, and information about institutions, faculty, staff, and students, and earned degrees conferred.

2. Faculty Activity Analysis, National Center for Higher Education Management Systems (three manuals and supporting software)
   These manuals provide techniques for collecting data that will serve as a foundation for allocating faculty salaries to institutional programs, and procedures for analyzing faculty activities.
3. Halstead, D. Kent, Higher Education Prices and Price Indexes, U.S. Department of Health, Education, and Welfare, 1975
   This book provides current measures of inflation in higher education and will be particularly valuable to financial planners in postsecondary institutions.

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